



# Rainwater Harvesting

Tej Attili, Water Quality Coordinator, Kickapoo Environmental Office

United States uses more water per capita than any other country and almost 80 percent of demand does not require drinkable water. A potentially huge and untapped technique exists for accumulating and storing the free rainwater which is called rainwater harvesting. Rainwater collected from the roofs of houses and buildings can make an important contribution to the availability of water. Rainwater harvesting systems can be simple (like seen in the picture) to construct from inexpensive local materials, and are potentially successful in most habitable locations. More complicated rainwater harvesting systems will include pre-filtration or first-flush devices, a big storage tank, and a distribution system with sanitization. Household rainfall catchment systems are appropriate in areas with an average rainfall greater than 200 mm (7.9 in) per year. It is becoming increasingly popular for gardening water and domestic use.



As rainwater may be contaminated due to pollutants like microscopic germs etc., it is often not considered suitable for drinking without treatment.

Rainwater harvested from roofs can contain animal and bird excrement, bugs, mosses and lichens, windblown dust, particulates from urban pollution, pesticides, and dissolved gasses (CO<sub>2</sub>, NO<sub>x</sub>, SO<sub>x</sub>). In the urban locations, high levels of contaminants are usually found in rainwater with the highest concentrations occurring in the first rain immediately after a dry spell; the concentration of these and other contaminants are reduced significantly by draining out the water from the first two rainfalls. Filtering the water before it fills the storage system is desirable provided the filter has the capacity to process the rain as fast as it falls. Storage tanks should be covered to prevent mosquito breeding and to reduce evaporation losses, contamination and algal growth. It is not recommended that you drink or bathe in the rainwater. But, in the Gansu province in China, harvested rainwater is boiled in parabolic solar cookers before being used for drinking. In Brazil, alum and chlorine is added to disinfect water before consumption.

One inch rain on a 2000 square foot roof generates over 1000 gallons of free water. Arid western states such as New Mexico and Arizona support and promote rainwater harvesting which returns moisture to the soil at slow absorbable rates, with very little evaporative loss, when applied through a subsurface irrigation system. The storage tank should be designed for a high volume bypass to divert excess rain water that cannot be filtered and stored fast enough. Also consider a tank overflow to release any excess water when the storage system is completely full. Both the bypass and the overflow must be directed away from the tank and discharged where it will not cause erosion or lead to structural building damage. For more information about the installation and usage of rainwater harvesting please contact Tej Attili at (785)486-2601 X7.

**KICKAPOO  
ENVIRONMENTAL  
OFFICE**

1107 Goldfinch Rd.  
Horton, KS 66439

Phone: 785-486-2601  
Fax: 785-486-2445

*Working Together for a Better  
Community!*



*We're on the Web!*

<http://ktik-nsn.gov/>

[KickapooEnvironmentalProtection  
.htm](http://ktik-nsn.gov/KickapooEnvironmentalProtection.htm)

## Spring 2011 Event Schedule!

**Earth Day 2011**—Come help us celebrate on April 22, 2011

9:00am—12:00 noon...T-shirts, bare-root trees and a meal will be provided to all volunteers helping with the K-20 Clean Up.

**1st Annual Household Hazardous Waste Round Up**—April 22, 2011 8:30am—4:00pm @ Kickapoo Environmental Parking Lot

**Community Cleanup Week**—The Kickapoo Environmental Office is organizing a Community Clean-up Project. Workers will be providing pick-up services on April 25th thru April 29th 2011.

**Electronic Waste Round Up**—May 2-6, 2011 located behind the Kickapoo Environmental Office

\* Please see flyers for more information or call us @ 785-486-2601

## What's That Smell?

By: Luke Terry, Kickapoo Environmental Director

It is not uncommon this time of year to receive both questions and complaints concerning the smell from the wastewater lagoons on the Kickapoo Reservation. Hopefully after reading this article you'll have a better understanding of what causes this odor and what's being done to help correct the problem.

If a lagoon is properly designed and well operated, odor problems are usually just a temporary problem caused by seasonal turnover. Such turnovers will last a couple of weeks at most and occur in early spring after ice melts off the surface

and in late fall when surface water temperatures are dropping. The smell is caused when septic solids on the bottom of the lagoon are brought to the surface due to the quick change in temperature. The same process happens naturally in ponds, but the odor isn't that noticeable.

A way to alleviate the problem is to build wastewater facilities on the northeast side of homes, businesses or offices. The wind rarely blows from the northeast, thus reducing any odor pushed by the wind. This isn't always possible and several of the Tribe's wastewater lagoons are poorly placed.

Another option is to install solar powered aerators to help increase the dissolved oxygen and this will speed the digestion process. Several of the Tribe's wastewater lagoons have these devices installed already.

